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Abstract: This article empirically investigates the effect of intelligence on inflation, using data from 122 countries, over the period 1990 – 2013. The findings suggest strong evidence for the hypothesis that intelligence is negatively linked to inflation. This paper documents that on average, when national IQ increases from the level of El Salvador (78 points) to that of Malaysia (91.7 points), the long run inflation decreases by 27 percent. In particular, the negative effect of intelligence on inflation is stronger in countries with low levels of democracy. The negative impact of national IQ remains robust when controlled for potential determinants of inflation.

Keywords: inflation; IQ; intelligence; democracy; cross-country

1. Introduction

During the last two decades, there has been voluminous research on the macroeconomic consequences of intelligence (e.g. Meisenberg, 2012). Indeed, related studies link national IQ to economic growth (Ram, 2007), total factor productivity (Jones, 2012), GDP per capita (Lynn & Vanhanen, 2002), financial development (Salahodjaev, 2015a) and wellbeing (Salahodjaev, 2015b). Further, national IQ successfully predicts cross-country variations in behavioral tendencies (e.g. alcohol consumption, suicide rates) (e.g. Belasen & Hafer, 2013; Voracek, 2004; Salahodjaev & Azam, 2015a). Albeit previous studies recognized intelligence as macroeconomic stability resource, there is no evidence if intelligence is associated with inflation, another antecedent for stable macroeconomic environment (Favero & Rovelli, 2003). Understanding the nature and causes of inflation differentials across the nations is important as inflation has detrimental consequences to society increasing income inequality (Albanesi, 2007), corruption (Braun, 2004) and crime (Gillani et al., 2009).

The present study seeks to contribute to the literature by analyzing the association between intelligence and inflation. By shedding light on the channels through which intelligence is linked to inflation, this study aims to fill an existing empirical gap. The closest study to our paper is that of de Jong (2002), who shows that culture is an important determinant of inflation in OECD countries.

There are a several reasons why intelligence may be negatively associated with inflation, the first of which social capital, a proclamation that we prefer to refer to as the Putnam hypothesis. While early studies fail to find statistically significant link between intelligence and social capital (Gurtman & Lion, 1982), the new empirical evidence confirms that cognitive development is a substitute for trust (Sturgis et al., 2010). In this vein, cross-country surveys produce strong, howbeit indirect, approval to Intelligence–Trust hypothesis (Helliwell & Putnam, 1999). For example, Rindermann (2008), using data from 41 countries, documents that national IQ is positively associated with trust among population. The conjectured mechanism for the positive effect of cognitive abilities on trust that in high-IQ environments, economic agents are better able to correctly recognize symptoms of (un)trustworthiness in civil and economic interactions. Sturgis et al. (2010 p. 52) argues that informed individuals 'do not suffer the costs of betrayal so frequently, as they are less inclined to place their trust in those who are unlikely to honour it'. With its potential to reduce transaction costs and addressing the problem of time-inconsistency (Grinblatt et al., 2012), intelligence may have direct effect on inflation dissimilar from other determinants.

Secondly, intelligence may have impact on inflation because it robustly predicts the quality of institutional arrangements (Kanyama, 2014; Salahodjaev & Azam, 2015b). For example, Potrafke (2012), using data from 125 nations, shows that corruption is lower in high IQ nations. In a similar vein, Salahodjaev (2015c) provides evidence on the impact of intelligence on the sizes of shadow economy. After taking into account potential feedback from institutions to cognitive development, the study documents robust negative effect of intelligence on the size of informal sector relative to GDP. Indeed, high-IQ individuals have higher probability to vote (e,g, Hauser, 2000; Rindermann, 2008; Rindermann et al., 2012), and 'they elect a government with low inflation policies … and the government appoints a conservative central banker who chooses an independent anti-inflation monetary policy' (Hayo, 1998 p. 245). Hence, the preferences of a median voter is the function of his cognitive abilities. While abilities are positively associated with wealth and earnings (e.g. Hause, 1975; Ceci & Williams, 1997), we may conjecture that price stability is one the preferences of median voters as a very high share of their income is eroded by inflation. These assumptions are similar to Acemoglu & Robinson (2006) who show in democratic societies bureaucrats represent the

desires of economic agents. In addition, executing a stable monetary policy requires public support and 'a measure of national intelligence such as IQ provides a good approximation of the degree of the support to such policies' (Kanyama, 2014 p. 52). To that end, the closest study to ours is that of Al-Marhubi (2000), who shows inflationary consequences of corruption for nations with high corruption.

On the other hand, there is no precise proxy for the quality of institutions in inflation studies. While related studies rely on central bank independence (CBI) index as a measure for the quality of anti-inflation policy (Cukierman, 1994; Posen, 1995; Eijffinger et al., 1996; de Haan and Kooi, 2000; Aisen and Veiga, 2006), the results are at best mixed. In our study, we consider CBI and intelligence simultaneously as institutional determinants of inflation. By including intelligence and CBI simultaneously in our empirical model, along with other control variables, it is possible to reveal any direct impact intelligence would exert on inflation.

Our study contributes to related studies in a number of ways. First, as in extant literature (e.g. Svenson & Nilsson, 1986; Ranyard et al., 2008), we empirically document that inflation is linked to human behavior. We investigate the impact of intelligence, a proxy for social capital, on inflation, in a quantity theory of money (QTM). Although, definitions and measures of intelligence vary substantially, we rely on nation-IQ - a robust measure for the level of cognitive development across nations (Lynn & Vanhanen, 2012a).

Second, we report a novel long run determinant of cross-national differences in inflation, namely national IQ. In this article, we test the effect of intelligence on inflation by using cross-section of 120 countries in 1990-2013. Indeed, we show that if intelligence increases from the level of El Salvador (78 points) to that of Malaysia (91.7 points), the long run inflation decreases by 27 percent. In particular, the negative effect of intelligence on inflation is stronger in countries with low levels of democracy.

2. Methodology

This study relies on the quantity theory of money (QTM) as its starting point (e,g, Fisher, 1911). The QTM can be expressed as: $MV = YP$

(1)

where M is the supply of money, V represents the velocity of money, Y is the supply of goods and services, proxied by GDP, and P is the price level. For linearity, we can proceed to growth rates: $m + v = y + p$ (2)

where lower letters represent growth rates. Hence, the basic econometric model for inflation (p_i) can be formulated as: $p_i = \alpha_0 + \alpha_1 m_i + \alpha_2 y_i + u_i$ (3)

In the expanded specification, we add intelligence (IQ_i), and the vector of control variables (X): $p_i = \alpha_0 + \alpha_1 m_i + \alpha_2 y_i + \alpha_3 IQ_i + X'\beta + u_i$ (4)

3. Data

To investigate the link between intelligence and inflation, we chose the largest available sample of countries. The full sample includes 122 countries over the years 1990–2013. We took the average of inflation rates to account for business cycle fluctuations.

In line with related studies, our dependent variable is inflation variable measured by the annual growth rate of the GDP deflator as the GDP implicit deflator shows the rate of price change in the economy as a whole. It is documented that using genuine inflation rates may lead to heteroskedastic residuals due to the presence nations with hyper-inflationary episodes. Hence, as suggested by Boyd et al. (2001), we exclude countries with average annual inflation rates greater than 100 percent from our estimations. Also, following Perera et al. (2013), we take natural logarithm of annual inflation rate.

Although, intelligence is a heavily debated concept, we use what has become the conventional cognitive development indicator on the macroeconomic level, which is nation's IQ. The national IQ data is derived from Lynn & Vanhanen (2012), updated with recent intelligent quotient scores from Grigoriev & Lynn (2014). This dataset, a revised study by Lynn & Vanhanen (2006), contains national IQs for more than 190 countries, including all the countries with population above 40,000.

Figure 1 shows the bivariate association between GDP deflator and nation IQ scores. As anticipated, intelligence is inversely related to price changes. The negative correlation between annual inflation rates and IQ is 0.40.
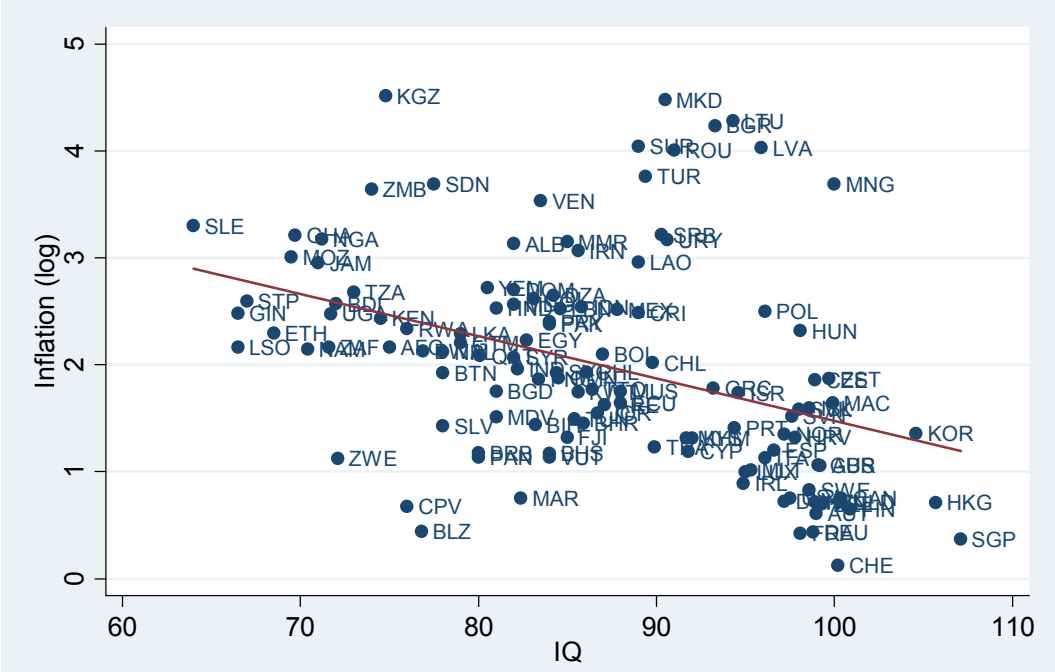

Fig. 1. Inflation and Intelligence

As conjectured above we include a vector of potential driving forces of inflation. First, we control for changes in money supply and real output. The positive evidence on monetary nature of inflation dates back to 'the quantity theory of money, posits that inflation is determined solely by the change in the relative supply of money and goods' (Kwon et al., 2009 p. 477). The data on money and quasi money growth and GDP growth rates is from World Bank.

Furthermore, we account for the effect monetary and political institutions. There are ample cross-national studies conjecturing that inflation and *CBI* are negatively associated (Berger et al., 2000). Thus, we need to ensure that estimate for *IQ* does not capture the monetary policy decisions measured by the degree of central bank independence. The *CBI* index is from Arnone et al. (2007). We also include a binary variable for socialist countries in our model.

We also control for the impact of trade policy. Theoretical studies suggest that inflation is lower in more open countries (Romer, 1993), because exchange rates reduce price distortions. Another argument to add a measure of trade openness in the regression is that, according to related

studies free trade increases the access of households to cheaper goods and services (Triffin & Grudel, 1962). The data on bilateral trade relative to GDP is from World Bank.

Finally, we control for the impact of budget deficit. While there is little evidence for the effect of deficit spending on price stability in developed countries (Sill, 2005), empirical studies show that budget deficits in developing countries lead to greater inflation (Neyapti, 2003). The descriptive statistics of the main variables are reported in Table 1.

Table 1

Descriptive statistics

Variable	Description [Source]	Mean (Std. dev.)
p	Inflation, GDP deflator (annual %) [World Bank]	2.008 (0.997)
m (log)	Money and quasi money growth (annual %) [World Bank]	2.683 (0.627)
y	GDP growth (annual %) [World Bank]	3.932 (2.082)
IQ	National IQ [Lynn and Vanhanen, 2012b]	86.589 (10.013)
CBI	Central Bank Independence index [Arnone et al., 2007]	0.596 (0.209)
Deficit	Cash surplus/deficit (% of GDP) [World Bank]	-1.641 (3.420)
Trade	Trade (% of GDP) [World Bank]	88.118 (50.938)
Democracy	Average of "Political Rights" and "Civil Liberties" [Freedom House]	4.471 (1.952)
Socialist	=1 if socialist country [authors' estimations]	0.131 (0.339)

4. **Results**

Table 2 presents the regression results. Model 1 estimates the regression equation 3 (QTM). We observe that increase in money supply is positively associated with inflation and statistically significant at the 1% level. In particular, the estimate for *M2* is quantitatively above the coefficient reported in Grauwe & Polan (2005) suggesting that there is omitted variable bias. Note that the QTM predicts that the estimate for M2 should be approximately one. The coefficient for GDP per capita has also anticipated sign and significant at the 1% level.

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To address the potential omitted variable bias we introduce the control variables. We add national IQ in model 2. As expected intelligence is negative and statistically significant at the 10% level. The results suggest when nation IQ increases by 10 points inflation should decrease by 13 percent. In model 3 CBI is included in the regression. The results for intelligence and the QTM remain unchanged while the coefficient for central bank independence is not significant. Thus, intelligence seems to have significant impact on price stability even after controlling for the CBI index.

In model 4, we chose to include a dummy variable for socialist countries as they are grouped in the upper-right part of the scatter plot (Fig. 1). Indeed the results show that inflation rate will be 2.05% higher for the socialist countries, which is consistent with the findings of Cukierman et al. (2002). The coefficient for IQ is qualitatively unchanged. In models 5 and 6, we progressively add budget deficit and trade openness to inflation equation. We document that the budget deficit is not significant in our regression, but trade openness does help to reduce inflation. Concerning our main hypothesis, intelligence retains its negative effect on inflation, although at a slightly lower level of significance. As intelligence increases from the level of El Salvador (78 points) to that of Malaysia (91.7 points), the inflation decreases by 27 percent.

It is important to note, that IQ is a statistically significant determinant of inflation rates in all econometric models. Therefore, the findings in Table 2 suggest that intelligence is significantly linked to inflation in the cross-national sample.

Table 2

Intelligence and inflation: main results

	(1)	(2)	(3)	(4)	(5)	(6)
m	1.305***	1.225***	1.214***	1.083***	1.081***	1.049***
	(0.131)	(0.134)	(0.133)	(0.141)	(0.142)	(0.145)
y	-0.114***	-0.124***	-0.113***	-0.109***	-0.115***	-0.108***
	(0.036)	(0.038)	(0.035)	(0.034)	(0.035)	(0.035)
IQ		-0.013*	-0.016**	-0.020***	-0.021***	-0.018**
		(0.006)	(0.007)	(0.007)	(0.007)	(0.008)
CBI			0.352	0.071	0.096	-0.011

	(1)	(2)	(3)	(4)	(5)	(6)
			(0.312)	(0.272)	(0.275)	(0.304)
Socialist				0.718***	0.741***	0.783***
				(0.236)	(0.238)	(0.245)
Deficit					0.015	0.020
					(0.015)	(0.014)
Openness						-0.002*
						(0.001)
Constant	-1.046***	0.298	0.378	1.092	1.266*	1.265*
	(0.314)	(0.727)	(0.715)	(0.752)	(0.756)	(0.752)
N	122	122	122	122	122	122
adj. R^2	0.608	0.617	0.617	0.667	0.666	0.672

Note: Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01

Further confirmation of the importance of intelligence to inflation is reported in Table 3, where we investigate the possibility that political and civil liberties may reduce inflation. In model 1 the democratic index, is added in the regression, and we document that the estimated coefficient has negative sign and statistically significant at the 5% level. These findings support Satyanath & Subramanian (2004, 2007) hypothesis that political participation in developing countries is one of the solutions to the control of inflation.

More importantly, the estimate for intelligence is largely negative and marginally significant at the conventional levels of testing. This demonstrates that nation IQ is important in explain cross-country differences in inflation.

In models 2 and 3, we include the interactive terms between IQ and democratic index, and between IQ and dummy variable for socialist countries in inflation equation. As shown only interaction variable between democracy and intelligence is statistically significant, suggesting that the negative effect of intelligence on inflation is stronger in countries with low levels of political and civil liberties.

Table 3

Intelligence and inflation: interaction effects

	(1)	(2)	(3)
m	1.008***	0.940***	1.002***
	(0.144)	(0.146)	(0.146)
y	-0.135***	-0.139***	-0.135***
	(0.040)	(0.039)	(0.041)
IQ	-0.014*	0.023	-0.015*
	(0.008)	(0.021)	(0.008)
CBI	0.211	0.457	0.217
	(0.316)	(0.310)	(0.317)
Socialist	0.683***	0.671***	0.311
	(0.246)	(0.232)	(1.333)
Deficit	0.021	0.026*	0.021
	(0.014)	(0.014)	(0.014)
Openness	-0.002*	-0.003**	-0.002*
	(0.001)	(0.001)	(0.001)
Democracy	-0.080**	0.659**	-0.081**
	(0.037)	(0.325)	(0.038)
IQ*Democracy		-0.009**	
		(0.004)	
IQ*Socialist			0.004
			(0.015)
Constant	1.384*	-1.503	1.465*
	(0.770)	(1.524)	(0.814)
N	120	120	120
adj. R^2	0.676	0.691	0.673

Note: Standard errors in parentheses; * $p<0.1$, ** $p<0.05$, *** $p<0.01$

In regressions that are not reported here, we repeat the estimations in Table 2 by using national IQ scores from Wicherts et al. (2010), which provides re-estimated IQ scores for 17 Sub-Saharan nations. The coefficients are substantially the same. Also, we tested whether our findings are sensitive to the inflationary patterns in the high-inflation nations and dropped all the nations with average inflation rate for the period 1990 – 2013 above 50%. The results indicate that, in line with the results reviewed above, intelligence has had a negative influence on the inflation in countries with an average annual inflation rate below 50%.

5. Conclusion

In this article, we explore the relationship between long-run inflation and intelligence in a cross-section of 122 countries. In line with ample studies, we use national IQ as a measure for intelligence of nations. We argue that intelligence has negative effect of inflation, because national IQ is a substitute for social capital from the perspective of Putnam hypothesis. In line with related literature, we also mention that intelligence predicts political behavior and support for stable macroeconomic environment.

The econometric results show negative and statistically significant effect of intelligence on inflation. Further, when we interact intelligence and quality of democracy, the results suggest that intelligence has a stronger effect in countries with underdeveloped democratic institutions.

The policy suggestions of our findings is not to call into question the effect of democratization on macroeconomic stability in developing nations, because democratic regimes are less volatile (Mulligan & Sala-i-Martin, 2004). Instead, we pinpoint, that democracy and intelligence are complimentary in inducing efficient anti-inflationary policies. Therefore, the results of this study highlight the importance of investing in human and social capital in developing countries with underdeveloped institutions.

References

Acemoglu D, & Robinson, J.A. (2006). *Economic Origins of Dictatorship and Democracy*. Cambridge University Press: Cambridge.

Al-Marhubi, F. A. (2000). Corruption and inflation. *Economics Letters*, *66*(2), 199-202.

Aisen, A., & Veiga, F.J. (2006). Does political instability lead to higher inflation? A panel data analysis. *Journal of Money, Credit, and Banking 38*(5), 1379–1390.

Albanesi, S. (2007). Inflation and inequality. *Journal of Monetary Economics*, *54*(4), 1088-1114.

Arnone, M., Laurens, B., Segalotto, J. F., & Sommer, M. (2007). Central bank autonomy: lessons from global trends. *IMF Working Papers*, 1-53.

Belasen, A., & Hafer, R. W. (2013). IQ and alcohol consumption: International data. *Intelligence*, *41*(5), 615-621.

Berger, H., De Haan, J., & Eijfinger, S.C.W. (2000). Central bank independence: an update of theory and evidence. Discussion paper 2353. CEPR, London.

Boyd, J. H., Levine, R., & Smith, B. D. (2001). The impact of inflation on financial sector performance. *Journal of Monetary Economics*, *47*(2), 221-248.

Braun, M. (2004). Inflation, inflation variability, and corruption. *Economics & Politics*, *16*(1), 77-100.

Ceci, S. J., & Williams, W. M. (1997). Schooling, intelligence, and income. *American Psychologist*, *52*(10), 1051.

Cukierman, A. (1994). Central bank independence and monetary control. *The Economic Journal, 104*, 1437–1448.

Cukierman, A., Miller, G. P., & Neyapti, B. (2002). Central bank reform, liberalization and inflation in transition economies—an international perspective. *Journal of Monetary Economics*, *49*(2), 237-264.

de Haan, J., & Kooi, W. (2000). Does central bank independence really matter? New evidence for developing countries using a new indicator. *Journal of Banking and Finance, 24*, 643–664.

De Jong, E. (2002). Why are price stability and statutory independence of central banks negatively correlated? The role of culture. *European Journal of Political Economy*, *18*(4), 675-694.

Eijffinger, S.C.W., van Rooij, M., & Schaling, E. (1996). Central bank independence: A panel data approach. *Public Choice, 89,* 163–182.

Favero, C. A., & Rovelli, R. (2003). Macroeconomic stability and the preferences of the Fed: A formal analysis, 1961-98. *Journal of Money, Credit, and Banking*, *35*(4), 545-556.

Fisher, I. (1911). *The Purchasing Power of Money: Its Determination and Relation to Credit, Interest, and Crises*. New York: Macmillan, reprinted, New York: Augustus M. Kelley, 1963.

Gillani, S. Y. M., Rehman, H. U., & Gill, A. R. (2009). Unemployment, poverty, inflation and crime nexus: cointegration and causality analysis of Pakistan. *Pakistan Economic and Social Review*, 79-98.

Grauwe, P. D., & Polan, M. (2005). Is Inflation Always and Everywhere a Monetary Phenomenon?*. *The Scandinavian Journal of Economics*, *107*(2), 239-259.

Grigoriev, A., & Lynn, R. (2014). A study of the intelligence of Kazakhs, Russians and Uzbeks in Kazakhstan. *Intelligence, 46,* 40-46.

Grinblatt, M., Keloharju, M., & Linnainmaa, J. T. (2012). IQ, trading behavior, and performance. *Journal of Financial Economics*, *104*(2), 339-362.

Gurtman, M., & Lion, C. (1982). Interpersonal trust and perceptual vigilance for trustworthiness descriptors. *Journal of Research in Personality, 16(1)*, 108–117.

Hause, J. C. (1975). Ability and schooling as determinants of lifetime earnings, or if you're so smart, why aren't you rich?. In *Education, income, and human behavior* (pp. 123-150). NBER.

Hauser, S. M. (2000). Education, ability, and civic engagement in the contemporary United States. *Social Science Research*, *29*(4), 556-582.

Hayo, B. (1998). Inflation culture, central bank independence and price stability. *European Journal of Political Economy*, *14*(2), 241-263.

Helliwell, J. F., & Putnam, R. D. (1999). Education and social capital (no. 7121): National Bureau of Economic Research

Jones, G. (2012). Cognitive skill and technology diffusion: An empirical test. *Economic Systems*, *36*(3), 444-460.

Kanyama, I. K. (2014). Quality of institutions: Does intelligence matter?. *Intelligence*, *42*, 44-52.

Kwon, G., McFarlane, L., & Robinson, W. (2009). Public Debt, Money Supply, and Inflation: a cross-country study. *IMF Staff Papers, 56*(3), 476 - 515.

Lynn, R., & Vanhanen, T. (2002). *IQ and the wealth of nations*. Westport, CT: Praeger Publishers

Lynn, R., & Vanhanen, T. (2006). *IQ and Global Inequality*. Augusta, GA: Washington Summit Publishers

Lynn, R., & Vanhanen, T. (2012a). National IQs: A review of their educational, cognitive, economic, political, demographic, sociological, epidemiological, geographic and climatic correlates. *Intelligence*, *40*(2), 226-234.

Lynn, R. & Vanhanen, T. (2012b). *Intelligence. A unifying construct for the social sciences*. London: Ulster Institute for Social Research.

Meisenberg, G. (2012). National IQ and economic outcomes. *Personality and Individual Differences*, *53*(2), 103-107.

Mulligan, C., Gil, R., & Sala-i-Martin, X. (2004). Do democracies have different public policies than nondemocracies?. *Journal of Economic Perspectives, 18*(1), 51–74.

Neyapti, B. (2003). Budget deficits and inflation: the roles of central bank independence and financial market development. *Contemporary Economic Policy*, *21*(4), 458-475.

Perera, A., Ralston, D., & Wickramanayake, J. (2013). Central bank financial strength and inflation: Is there a robust link?. *Journal of Financial Stability*, *9*(3), 399-414.

Posen, A.S. (1995). *Declarations are not enough: Financial sector sources of central bank independence.* In: Bernanke, B., Rotemberg, J. (Eds.), NBER Macroeconomics Annual. MIT Press, Cambridge, MA, 253–274.

Potrafke, N. (2012). Intelligence and corruption. *Economics Letters*, *114*(1), 109-112.

Ram, R. (2007). IQ and economic growth: Further augmentation of Mankiw–Romer–Weil model. *Economics Letters, 94*, 7–11.

Ranyard, R., Del Missier, F., Bonini, N., Duxbury, D., & Summers, B. (2008). Perceptions and expectations of price changes and inflation: A review and conceptual framework. *Journal of Economic Psychology*, *29*(4), 378-400.

Rindermann, H. (2008). Relevance of education and intelligence for the political development of nations: Democracy, rule of law and political liberty. *Intelligence*, *36*(4), 306-322.

Rindermann, H., Flores-Mendoza, C., & Woodley, M. A. (2012). Political orientations, intelligence and education. *Intelligence*, *40*(2), 217-225.

Salahodjaev, R. (2015a). Intelligence and finance. *Personality and Individual Differences*, *86*, 282-286.

Salahodjaev, R. (2015b). IQ and the wellbeing of nations.

Salahodjaev, R. (2015c). Intelligence and shadow economy: A cross-country empirical assessment. *Intelligence, 49*, 129-133.

Salahodjaev, R., & Azam, S. (2015a). IQ and the Weight of Nations. *Personality and Individual Differences*, *87*, 105-109.

Salahodjaev, R., & Azam, S. (2015b). Intelligence and gender (in) equality: Empirical evidence from developing countries. *Intelligence*, *52*, 97-103.

Satyanath, S, & Subramanian, A. (2004). What determines long-run macroeconomic stability? Democratic institutions. IMF Working Paper No. 215, International Monetary Fund: Washington, DC.

Satyanath, S, & Subramanian, A. (2007). The political economy of nominal macroeconomic pathologies. Staff papers: *International Monetary Fund, 54*(3), 419–453.

Sill, K. (2005). Do budget deficits cause inflation?. *Business Review*, *2005* (Q3).

Svenson, O., & Nilsson, G. (1986). Mental economics: Subjective representations of factors related to expected inflation. *Journal of Economic Psychology*, *7*(3), 327-349.

Thaler, R. H. (1999). Mental accounting matters. *Journal of Behavioral Decision Making, 12*, 183–206.

Voracek, M. (2004). National intelligence and suicide rate: an ecological study of 85 countries. *Personality and Individual Differences*, *37*(3), 543-553.

Wicherts, J. M., Dolan, C. V., & van der Maas, H. L. (2010). A systematic literature review of the average IQ of sub-Saharan Africans. *Intelligence*, *38*(1), 1-20.